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THE SANITARY CODE

ARTICLE XI

Minimum Requirements for the Disposal of Sanitary Sewage in Unsewered Areas

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PART I. SUBSTANTIVE PROVISIONS

Regulation 1. Definitions

1.1 The words, terms, or phrases listed below for the purpose of this article shall be defined and interpreted as follows:

Approving Authority. The approving authority is the legally constituted body having the rightful power to permit, certify, or approve works for the disposal of sewage or for the treatment of sewage or industrial wastes.

Building Drain. The building drain is that part of the lowest horizontally sloping piping of a drainage system which receives the discharge from soil, waste, and other drainage stacks inside the walls of the building and conveys the discharge to the building sewer.

Building Sewer. The building sewer is the pipe which begins 5 feet outside the inner face of the building wall and extends to a public sewer, septic tank, or other place of sewage disposal.

Cesspool. A cesspool is a covered pit with open-jointed lining in its bottom portions into which raw sewage is discharged, the liquid portion of the sewage being disposed of by seeping or leaching into the surrounding porous soil, and the solids or sludge being retained in the pit to undergo partial decomposition before occasional or intermittent removal.

Disposal Area. The disposal area is the entire area used for underground dispersion of the liquid portion of sewage. It may consist of a seepage pit or of a disposal field (see definition) or of a combination of the two.

Disposal Bed. A disposal bed is composed of stone partially filling a shallow excavation, distribution lines being laid in the stone, and the entire area being covered with topsoil or other suitable fill.

Disposal Field. A disposal field consists of disposal trenches, a disposal bed, or a combination of the two. It is used for dispersion of the liquid portion of sewage into the ground.

Disposal Trench. A disposal trench is a ditch or trench with vertical sides and substantially flat bottom partially filled with stone in which a single distribution line has been laid, the trench then being backfilled.

Distribution Box. A distribution box is a watertight structure which receives settled sewage and distributes it in substantially equal portions to two or more pipe lines leading to a disposal area.

Distribution Line. A distribution line is an open-jointed or perforated pipe used in the dispersion of sewage into disposal trenches or disposal beds.

Dosing Tank. A dosing tank is a watertight receptacle placed between a settling or septic tank and a distribution box or disposal area, and equipped with an automatic siphon or a pump designed to discharge

sewage intermittently to a disposal field in amounts proportioned to the area of the field and to provide a rest period between such discharges.

Dwelling. Dwelling means every building or shelter used or intended for human habitation or periodic activity.

Grease Trap. A grease trap is a device in which grease present in sewage is intercepted and from which it may be removed periodically for disposal.

Individual Sewage Disposal System. An individual sewage disposal system is a subsurface sewage disposal system owned and operated by a person as defined in this regulation, and designed and constructed to treat sewage in a manner that will retain some of the solids in a cesspool, settling tank, or septic tank, and that will dispose of the liquid portion into the soil.

Industrial Waste. Industrial waste means any water carried or liquid waste resulting from any process of industry, manufacture, trade, or business, or from the development or recovery of any natural resource.

Invert. The invert is the lowest portion of the internal cross section of a pipe or fitting.

Leaching Area. The leaching area is the bottom of a disposal trench, disposal bed, or that portion of a seepage pit through which the sewage seeps into soil.

Leaching Bed. Leaching bed means the same as disposal bed.

Leaching Trench. Leaching trench means the same as disposal trench.

Lot. Lot means an area of land in one ownership, with definite boundaries, used, or available for use, as the site of one or more buildings.

Main Vent. See Vent Stack.

Maximum Ground Water Elevation. Maximum ground water elevation means the height of the ground water table when it is at its maximum level or elevation. This level is usually reached during the months of December through April, and allowances should be made therefor at other times of the year.

Multiple Compartment Tanks. A multiple compartment tank is a settling or septic tank containing more than one settling compartment or chamber in series.

Occupant. Occupant means every person over one year of age living or sleeping in a dwelling.

Owner. Owner means every person who alone, or jointly, or severally with others (*a*) has legal title to any dwelling or dwelling unit, or (*b*) has care, charge, or control of any dwelling or dwelling unit as agent, executor, executrix, administrator, administratrix, trustee, lessee, or guardian of the estate of the holder of legal title. Each such person thus representing the holder of legal title is bound to comply with the provisions of these minimum standards as if he were the owner. Owner also means every person who operates a rooming house.

Percolation Test. A percolation test is a test to determine the rate of movement or flow of water through the interstices or pores of a soil.

Person. Person means every individual, partnership, corporation, firm, association, or group, including a city, town, county, or other governmental unit, owning property or carrying on an activity regulated by this article.

Privy. A privy is a structure used for the disposal of excreta without the aid of water. It consists of a shelter built above a pit or vault in the ground into which the excrement falls.

Sanitary Sewage. Sanitary sewage is any liquid waste containing animal or vegetable matter in suspension or solution, or any water-carried waste resulting from the discharge of water closets, laundry tubs, washing machines, sinks, dishwashers, or any other source of water-carried waste of human origin or containing putrescible material.

Sanitary Sewer. A sanitary sewer is a pipe which carries sewage or industrial wastes without the intentional admission of storm, surface, or ground waters.

Scum. Scum is a mass of sewage solids floating at the surface of sewage because it is buoyed up by entrained gas, grease, or other substances.

Seepage Pit. A seepage pit is a covered pit with open-jointed lining through which septic tank effluent seeps or leaches into the surrounding soil.

Septic Tank or Settling Tank. A septic or settling tank is a watertight receptacle which receives the discharge of sewage from a building sewer, and is designed and constructed so as to permit deposition of settlable solids from the liquid, digestion of the organic matter, and discharge of the liquid portion into a disposal area. The settled and partially decomposed solids must be removed from time to time.

Sewage. Sewage means sanitary sewage.

Siphon. A siphon is a hydraulic device designed to discharge rapidly the contents of a dosing tank between predetermined water or sewage levels.

Slope. Slope or grade is the rate of fall or drop of a pipe line or of the ground surface. It is commonly expressed as fall or drop in inches per 100 feet, inches per foot, or feet per 100 feet.

Test Pit. A test pit is an open pit dug to permit the examination of the soil and to test its permeability for subsurface sewage disposal.

Trap. A trap is a fitting or device so designed and constructed as to provide, when properly vented, a liquid seal that will prevent the back passage of air without materially affecting the transmission of sewage or waste water.

Treatment Plant. Treatment plant means any filter, tank, lagoon, or other works installed for the purpose of treating, neutralizing, stabilizing, or disposing of sewage, water-carried industrial wastes, or liquid wastes.

Vent Stack. A vent stack is a vertical pipe installed within a building to provide entrance and discharge of air to and from any piping in a building plumbing system.

Watercourse. A watercourse is any stream, drain, pond, lake or other body of water drained by a stream, dry ditch, or other depression that will permit drainage water to empty into any open waters of the Commonwealth.

REGULATION 2. GENERAL REQUIREMENTS

2.1 Disposal Works Construction Permit—No individual sewage disposal system or other means of sewage disposal shall be located, constructed, altered, repaired, or installed until a permit for its location, construction, alteration, repair, or installation shall have been issued by the board of health. Permits shall not be issued for such works to be installed at motels, overnight camps, trailer parks, recreational camps, nursing homes, rest homes, police stations, schools, or public buildings until the plans of sewage disposal for such establishments have been approved by the Massachusetts Department of Public Health in accordance with Section 17 of Chapter 111 of the General Laws. Nor shall permits be issued for such works to be installed when the volume of waste to be disposed of is in excess of 2000 gallons per day, until the plans of sewage disposal have been approved by the Massachusetts Department of Public Health in accordance with said Section 17 of Chapter 111.

2.2 Application for Disposal Works Construction Permit—An application for a construction permit shall be submitted on a form supplied by the board of health. Such application shall be accompanied by a plan showing the property to be served, the location of the proposed sewage disposal facilities, the precise location of manholes and cleanout plugs, the location of any known sources of water supply, stream, or drain within 100 feet of the premises, the location of test pits, the results of percolation tests, and such other plans, specifications, and information as the board of health shall determine to be necessary. A permit so granted shall expire two years from the date of issue unless construction is begun before the expiration date, and said permit shall be renewed upon request only if the conditions set forth in the original application have not changed.

2.3 Use—The use of an individual sewage disposal system shall be in compliance with the terms of the permit issued therefor and shall not exceed the design capacity of the system.

2.4 Building Permit—Construction under a building permit on land where a common sewer is not available may not proceed until a disposal works construction permit has been obtained from the board of health.

2.5 Certificate of Compliance—A new individual sewage disposal system and alterations or repairs to an existing individual system shall not be covered, nor shall new dwellings or buildings or additions thereto which must rely on new individual sewage disposal systems for sewage disposal be sold or occupied, until the board of health shall have issued a

certificate of compliance indicating that said disposal system has been located and constructed, altered, or repaired in compliance with the terms of the permit and the requirements of this code.

2.6 Fees—A fee for the issuance of a construction permit may be charged by the board of health at the time an application is made for the permit.

2.7 Inspection—The board of health may inspect the installation of an individual sewage disposal system at any stage of its construction, and may require necessary modifications if adverse conditions are encountered that were not originally observed.

2.8 Discharge to Watercourses—Sanitary sewage, industrial waste, sink waste or waste water that has been used for washing or cooking, or the effluent from any sewage or waste treatment plant, or other polluting water, shal not be discharged into or put into any lake, pond, stream, tidal water, watercourse, or open or covered drain tributary thereto, unless approved by the Massachusetts Department of Public Health.

2.9 Connection to Common Sanitary Sewer—Individual sewage disposal systems or other means of sewage disposal shall not be approved where a common sanitary sewer is accessible in an abutting way and where permission to enter such a sewer can be obtained from the authority having jurisdiction over it. The board of health may require the owner or occupant of an existing building or buildings, wherever a common sanitary sewer is accessible in an abutting way, to cause such building or buildings to be connected with the common sanitary sewer in a manner and within a period of time satisfactory to the board of health.

2.10 Volume of Sanitary Sewage—Each unit of the disposal system shall be designed to treat adequately the estimated ultimate volume of sanitary sewage to be discharged from the premises to be served. The volume of such flow shall be based on the estimated maximum contributory population and the resultant expected daily quantities of sewage as determined from the following table:

SEWAGE FLOW ESTIMATES*

Type of Establishment	*Gallons per Person/Day*
Single and multiple residence (2 persons per bedroom)	50
Apartment (2 persons per bedroom)	50
Cottage (2 persons per bedroom)	50
Rooming house	40
Hotel or boarding house	50
Nursing home	75
Rest home	75
School without cafeteria, gymnasium, or showers	8
School with cafeteria, but no gymnasium or shows	12

SEWAGE FLOW ESTIMATES*

(*continued*)

Type of Establishment	*Gallons per Person/Day*
Elementary school with cafeteria, gymnasium, and showers	15
Junior or senior high school with cafeteria, gymnasium, and showers	20
Boarding school or college	90
Trailer or mobile home	50
Motel	50
Public institution other than a hospital	100
Public picnic park—toilet wastes only	5
Public park with bathhouse, showers, and flush toilets	10
Swimming pool or other bathing place	10
Camp, recreational—washrooms and toilets	25
Camp, recreational—mess hall	15
Restaurant, intown—per table or counter seat	35
Restaurant, intown—toilet and kitchen wastes per patron	7
Restaurant, intown—kitchen wastes per meal served	3
Restaurant, throughway service area—per counter seat	350
Restaurant, throughway service area—per table seat	150
Factory or industrial plant without cafeteria—per person	15
Factory or industrial plant with cafeteria—per person	20
Work or construction camp	50
Office building	15
	Gallons per Day
Drive-in theater—per stall	3
Theater—per person	3
Auditorium—per person	3
Gymnasium—per spectator	3
Gymnasium—per participant	10
Church—per person at maximum usage	3
Service station (excluding throughways)—per set of pumps	500
Tavern—per seat	20
Bowling alley—per alley	50
Laundromat—per machine	400
Hospital—per bed	200
Country club—per resident member	100
Country club—per patron	25

* Sewage flow estimates other than those listed will be considered in relation to actual meter readings of established flows from known or similar installations.

2.11 Type of System—Except as provided in Regulation 11, an individual sewage disposal system shall consist of a septic tank discharging its effluent to a suitable subsurface disposal area as hereinafter described.

2.12 Drainage—An individual disposal system shall be located in an area where no surface water will accumulate. Provision shall be made to minimize the flow of surface water over the area.

2.13 Backfill—Backfill shall be free from large stones, frozen clumps of earth, masonry, stumps, or waste construction material. Machinery which may crush or disturb the alignment of pipe in the disposal system shall not be allowed on any part of the disposal area.

2.14 Construction in Fill—Where a sewage disposal system is constructed in fill, the fill shall be either mechanically or hydraulically compacted, or it shall be allowed to settle for a minimum period of 6 months. The fill material shall be free from large stones, masonry, stumps, frozen clumps of earth, wood, tree branches, and waste construction material. Before the fill is put in place, all trees and brush shall be burned or removed. Topsoil and stumps shall be removed from all areas in which the bottom of the disposal field is within 4 feet of the original ground level.

2.15 Individual Service—The use of an individual sewage disposal system by more than one property, dwelling, or other premises is prohibited.

2.16 Cleaning and Repairing—Every owner or agent of premises in which there are any private sewers, individual sewage disposal systems, or other means of sewage disposal shall keep the sewer and disposal system in good repair and shall have such works cleaned or repaired at such times as ordered by the board of health. If the owner or agent of the premises fails to comply with such order, the board of health may cause the works to be cleaned or repaired and all expenses incurred to be paid by the owner.

2.17 Maintenance—Sewage disposal works shall be maintained in a manner that will not create objectionable conditions or cause the works to become a source of pollution to any of the waters of the Commonwealth.

2.18 Discharge to Surface of Ground—No sanitary sewage or industrial waste shall be allowed to discharge or spill onto the surface of the ground or to flow into any gutter, street, roadway, or public place; nor shall such material discharge onto any private property.

2.19 Flow Measurement—Meters, dosing counters, or other flow measuring devices shall be installed to record accurately the flow of sewage when required by the board of health or the Department of Public Health.

Regulation 3. Location

3.1 General—The location and installation of each individual sewage disposal system, or other means of disposal, shall be such that with responsible maintenance it will function in a satisfactory manner and will not create a nuisance or discharge into any watercourse of the State. In determining a suitable location for the system, consideration

shall be given to the size and shape of the lot, slope, natural and adjusted drainage, existing and known future water supplies, depth to ground water and impervious material, and possible expansion of the system.

3.2 Distances—The location of the disposal facilities shall be such as to provide between it and the components listed in the following table not less than the distances there stated:

Component	*Septic Tank*	*Leaching Field, Seepage Pit and Cesspool*	*Building Sewer*	*Privy*
	Feet	Feet	Feet	Feet
Well or suction line	50	50*	(a)	50*
Water supply line (pressure)	(b)	(b)	(b)	(b)
Property line	10	10	—	30
Dwelling	5	20	—	30
Surface water supplies or tributaries, including open and subsurface drains	50*	50*	50*	
Watercourses, including streams, ponds, open and subsurface drains	10	25		
Edge of fill		25		

* 50 feet is a *minimum* acceptable distance, but will not assure continued protection of water supplies under all conditions of use or soil formation. The distance shall be increased to 100 feet or more where required by conditions peculiar to a lot.

(a) 10 feet if constructed of durable corrosion resistant material with watertight joints, or 50 feet if any other type of pipe is used.

(b) Disposal facilities should be installed as far as possible from water supply lines. Where sewer lines cross water supply lines, both pipes should be constructed of durable corrosion resistant material with watertight joints. When possible, water pipes should be laid at an elevation above the sewer pipe.

Regulation 4. Building Sewers in Unsewered Areas

4.1 Size—The building sewer shall be of such size as required by the approving authority to serve the connected fixtures. In no case shall the building sewer be less than 4 inches in diameter.

4.2 Material—The building sewer shall be constructed of cast iron, vitrified tile, concrete, asbestos cement, or other material acceptable to the approving authority.

4.3 Joints—All pipe joints of the building sewer shall be made watertight and protected against damage by roots. Poured-type joints shall be properly wiped on the inside to present no obstruction of flow.

4.4 Foundation—The building sewer shall be laid on a firm foundation.

4.5 Grade—The building sewer shall be designed to provide a minimum velocity of sewage flow of 2 feet per second when flowing full. This requirement is met when a 4-inch building sewer is laid on a grade of not less than ⅛ inch per foot.

4.6 Alignment—The building sewer shall be laid on a continuous grade and as nearly as possible in a straight line.

4.7 Manholes—Manholes with removable covers of concrete, iron, or other durable material shall be provided at the location of all junctions of two or more pipes, at all sharp changes in direction or grade of pipes, and in no event at intervals greater than 300 feet.

4.8 Ventilation—The building sewer shall be vented through the vent stack or main vent of the building served by it, and no trap shall be installed in the building sewer or building drain.

4.9 Grease Traps—The use of grease traps shall be limited to installations from which large quantities of grease can be expected to be discharged. A grease trap shall be installed on a separate building sewer serving that part of the plumbing system into which the grease will be discharged. Grease traps shall be located and constructed in a manner that will assure separation of the grease and permit easy access for cleaning.

Regulation 5. Septic Tanks

5.1 Capacities—A septic tank shall have a liquid capacity of 150 per cent of the daily sewage flow estimate, but in no case less than 500 gallons.

Note: FHA Minimum Property Standards and the Veterans Administration require a higher minimum liquid capacity.

5.2 Garbage Disposal—Where domestic garbage grinders are installed or their installation is contemplated, the liquid capacity of the septic tank shall be at least 200 per cent of the sewage flow estimate, but in no case less than 750 gallons.

5.3 Liquid Depth—The liquid depth of the tank shall be a minimum of 4 feet. The tank may be oval, circular, rectangular, or square in plan, provided the distance between the outlet and inlet of the tank is at least equal to the liquid depth of the tank.

5.4 Compartments—Multi-compartment tanks with transverse baffles may be used provided that

a. The number of compartments does not exceed two.

b. The total capacity is not less than 2000 gallons.

c. The capacity of the first compartment is at least equal to the capacity of the second compartment.

5.5 Tanks in Series—The board of health may approve the installation of uncompartmented septic tanks placed in series provided that the capacity of the first tank is at least equal to the capacity of the second tank and provided that the number of such tanks does not exceed two.

5.6 Tanks in Parallel—Septic tanks shall not be installed in such a manner that the sewage flow from a single sewer is divided, with one portion being discharged to one tank and the remaining portion being discharged to a second tank.

5.7 Construction—Septic tanks shall be watertight and constructed of sound and durable materials not subject to excessive corrosion, decay, or frost damage, or to cracking or buckling due to settlement or backfilling. Tanks and covers shall be designed and constructed so as to withstand normal structural loadings. Any tank installed in a location where there is high ground water shall be weighted to prevent the tank from floating when it is emptied.

5.8 Height of Tees above Flow Line—Inlet and outlet tees or baffles shall extend a minimum of 6 inches above the flow line. Tops of inlet and outlet tees shall be left open to provide ventilation through the building sewer. There shall be an air space of at least 3 inches between the tops of the tees and the inside of the tank cover.

5.9 Depth of Tees—The inlet tee or baffle shall extend a minimum of 10 inches below the flow line. The outlet shall be provided with a tee extending downward below the flow line in accordance with the following table:

Liquid Depth in Septic Tank	*Depth of Tee Below Flow Line*
4 feet	14 inches
5 feet	19 inches
6 feet	24 inches
7 feet	29 inches
8 feet	34 inches

5.10 Foundation—Septic tanks shall be installed on a level stable base that will not settle.

5.11 Materials—Septic tanks may be constructed of poured reinforced concrete, precast reinforced concrete, prefabricated material, or metal.

Steel tanks of all sizes shall be designed in accordance with the provisions of this article and shall be fabricated from at least 14-gauge steel or sheet iron provided inside and outside with a protective coating of asphaltum. The use of steel or sheet iron tanks is not encouraged.

5.12 Access Manholes—At least one manhole with a removable cover of concrete, iron, or other durable material shall be provided for each compartment. Inlet and outlet tees shall be made accessible for cleaning by providing manholes over the tees or providing clean-out plugs in the septic tank cover. Manholes shall be brought up to within 12 inches of finish grade.

5.13 Accessibility—Septic tanks shall be located on the lot so as to be accessible for servicing and cleaning. They should be placed between the building and the street wherever possible to facilitate connection to the sanitary sewer at the time such a sewer is installed.

5.14 Invert Elevation—The invert elevation of the inlet of a septic tank shall be at least 2 inches above the invert elevation of the outlet. Inlet and outlet shall be located at the center line of the tank.

5.15 Backfill—Backfill around the septic tank shall be placed in such a manner as to prevent damage to the tank.

5.16 Cleaning—Septic tanks should be pumped out when the combined depth of sludge and scum at the inlet is in excess of ⅓ of the liquid depth of the tank. In no event should the scum extend above the top of the inlet or outlet tees.

REGULATION 6. DOSING TANKS

6.1 General—A dosing tank shall be provided where the volume of waste to be disposed of is in excess of 2000 gallons per day.

6.2 Siphons and Pumps—Siphons and pumps should operate automatically. They shall be of the alternating type when the total volume of waste to be disposed of exceeds 5000 gallons per day. Alternating siphons and pumps shall discharge to separate disposal areas of equal size.

6.3 Capacity—Dosing tanks shall have a capacity equal to the volume required to cover the disposal field area being dosed to a depth of ¼-inch.

6.4 Construction—Dosing tanks shall be constructed to conform to the provisions of Regulation 5.8 of this article.

6.5 Foundation—Dosing tanks shall be constructed on a level stable base that will not settle.

6.6 Material—Materials used shall be those specified in Regulation 5.12 of this article.

6.7 Ventilation—Dosing tanks and similar appurtenances shall be constructed in a manner that will permit ventilating the disposal area back through the building sewer.

6.8 Inlet and Outlet—The inlet shall be above maximum water elevation in the tank. The outlet shall conform with the requirements of the manufacturer of the dosing tank siphon.

6.9 Manholes—To provide access and to facilitate repair or adjustment of the siphon, dosing tanks shall be provided with a manhole with a removable cover of concrete, iron, or other durable material. Manholes shall be brought up to finished grade.

REGULATION 7. MINIMUM CONSTRUCTION REQUIREMENTS FOR DISPOSAL FIELDS

7.1 Minimum Leaching Area—The extent of leaching area required for each disposal field shall be determined in accordance with the provisions of Regulation 14 of this article, with the estimated daily sewage flow as determined from Regulation 2.10 of this article.

7.2 Ground Water—Disposal fields shall not be constructed in areas where the maximum ground water elevation is less than 4 feet below the bottom of the distribution pipe. *Provided,* that in instances where

the soil consists of porous sand or gravel with a percolation rate of 2 minutes or less per inch, the maximum ground water elevation may not be less than 2 feet below the bottom of the distribution pipe. Ground water determinations should be made during the period of year when the ground water table is at its highest elevation.

7.3 Impervious Formations—Disposal fields shall not be constructed in areas where ledge or other impervious ground formations are less than 4 feet below the bottom of the disposal field.

7.4 Excavation—Excavation may be made by machinery provided that the soil at the bottom of the disposal trench or bed is not compacted. The bottom of each trench or disposal bed shall be level.

7.5 Stone—The stone used in the disposal field shall consist of washed crushed stone or washed gravel stone ranging from ¾ to 1½ inches in size and free from iron, fines, and dust. It shall extend the full width of the trench or bed, shall not be less than 6 inches deep beneath the bottom of the distribution lines, and shall extend at least to the top of the distribution pipes. The stone shall be covered with at least a 2-inch layer of washed crushed stone or washed gravel stone ranging from ⅛ to ⅜ of an inch in size and free from iron, fines, and dust.

7.6 Distribution Lines—Distribution lines shall have a minimum diameter of 4 inches and shall be laid true to line and grade. The distribution pipe may consist of perforated tile, perforated bituminized-fiber, perforated plastic, or perforated asbestos cement pipe penetrated by an adequate number of perforations of adequate size to obtain good distribution of liquid, or of vitrified clay bell and spigot pipe laid with an adequate number of loose joints. A loose joint is a joint created by wedging in alignment the spigot of one pipe ¼ inch from the bottom of the bell of a second pipe. All distribution pipe joints from the distribution box to the first section in the laterals shall be laid tight. Any section of pipe laid with tight joints shall not be considered in determining the leaching area. When fields are dosed, the ends of all distribution lines shall be capped.

7.7 Depth—The depth to the crown of the pipe forming the distribution lines shall be not less than 12 inches below finished ground surface.

7.8 Sloping Ground—When distribution lines are laid at different elevations, construction shall be such as to prevent the sewage from upper trenches from flowing into lower trenches.

7.9 Fill—When disposal fields are constructed in a filled area, the filled area shall extend at least 25 feet in every direction beyond the limits of the disposal field. Before the field is installed, the fill must either be mechanically or hydraulically compacted or allowed to settle for a period of 6 months.

7.10 Backfill—Backfill of disposal trenches or beds shall be carefully placed to prevent damage to piping and shall be carefully tamped. Heavy grading machinery shall not be permitted to pass over the area; however, the surface may be rolled by a hand roller.

7.11 Summer Use—At installations where the leaching facilities are to be used only during the summer for a period of 3 months or less, the disposal area may be reduced by 20 per cent.

7.12 Garbage Disposal—When garbage grinders are used, the disposal area shall be increased by 25 per cent.

7.13 Disposal Field Construction—Disposal trenches and beds shall be constructed in accordance with the dimensions listed in the following table:

Minimum lines per field	2
Maximum length per line	100 ft.
Minimum diameter of distribution lines	4 in.
Grade of distribution lines	4 to 6 in. in 100 ft.
Maximum width of disposal trench bottom	3 ft.
Minimum distance between walls of adjacent trenches	Three times the width of trench
Maximum distance between distribution lines in disposal beds	6 ft.

7.14 Drainage—The ground surface of and adjacent to a disposal area shall have sufficient slope to prevent the accumulation of surface water.

7.15 Location under Parking Area—When disposal fields are constructed under parking areas, said areas shall be paved with a minimum of 2 inches of bituminous concrete or paving of equivalent strength.

Regulation 8. Distribution Boxes

8.1 Distribution Box—A distribution box shall be installed between a septic tank and a disposal field or seepage pit, except when only one seepage pit is used.

8.2 Inlet—Where the distribution system is dosed by siphons or pumps, the distribution box shall be provided with an inlet tee or a suitable baffle.

8.3 Outlet Elevations—The invert elevation of all of the outlets shall be the same. Outlet pipes shall be level for at least one pipe length.

8.4 Sump—The distribution box shall be provided with a sump extending 6 inches below the bottom of the outlet pipe.

8.5 Construction—Distribution boxes shall be constructed of concrete or other durable material. They shall be watertight and designed to accommodate the necessary distribution laterals.

8.6 Number of Outlets—There shall be at least one 4-inch outlet for every pair of 4-inch distribution laterals, and there shall be at least one 6-inch outlet for every two pairs of 4-inch distribution laterals.

8.7 Foundation—Distribution boxes shall be installed on a level stable base that will not settle.

8.8 Ventilation—The distribution box shall be constructed in such a manner as to provide ventilation of the disposal field, either through a special vent or back through the building sewer.

8.9 Cover—Distribution boxes shall be provided with a removable cover of concrete, iron, or other durable material.

REGULATION 9. SEEPAGE PITS

9.1 Use—Seepage pits may be constructed in lieu of disposal fields only where special conditions justify their use and only to dispose of septic tank effluent.

9.2 Leaching Area—The leaching area required shall be determined in accordance with the provisions of Regulation 14 of this article. The leaching area shall be considered as the pervious bottom and side areas of the excavation below the elevation of the inlet.

9.3 Spacing—When more than one seepage pit is installed, the pits shall be spaced on centers no closer than three times the effective outside diameter of the pit.

9.4 Cover—The top shall be provided with an access manhole with a removable cover of concrete, iron, or other durable material.

9.5 Construction—The lining of the pit shall be constructed of stone, brick, or concrete, laid dry with open joints in a manner to prevent displacement.

9.6 Ground Water—Seepage pits shall not be constructed in areas where the maximum ground water elevation is less than 4 feet below the bottom of the pit. *Provided,* that in instances where the soil consists of porous sand or gravel with a percolation rate of 2 minutes or less per inch, the maximum ground water elevation may not be less than 2 feet below the bottom of the pit. Ground water determinations should be made during the period of the year when the ground water table is at its highest elevation.

REGULATION 10. PRIVIES AND CHEMICAL TOILETS

10.1 Use—A permanent privy or chemical toilet shall not be constructed or continued in use unless the board of health has approved in writing its construction or continued use, based upon a determination by the board of health that the privy or chemical toilet will not (*a*) endanger the health of any person or (*b*) cause objectionable odors or other undue annoyances.

The board of health shall permit the use of chemical toilets on a construction project for the convenience of persons so engaged. The owner shall cause the chemical toilets to be maintained in a sanitary manner, and immediately upon the completion of the project he shall remove the chemical toilet, dispose of the contents in a manner approved by the board of health, and leave the premises in a condition satisfactory to the board of health.

10.2 Location—Privies shall be located in accordance with the requirements of Regulation 3 of this article.

10.3 Construction—Privies shall be constructed with self-closing seat covers and fly-tight vaults, and with a screened vent from the vault to the atmosphere.

10.4 Maintenance—When a privy vault becomes filled to within 2 feet of the surface of the ground, it shall either be cleaned and the contents disposed of in a sanitary manner, or it shall be covered with a minimum of 2 feet of clean compacted earth.

Regulation 11. Cesspools

11.1 Use—Disposal of sanitary sewage by means of a cesspool shall be confined to those instances where short-term needs, special circumstances, or infrequent use warrant approval.

11.2 Capacity—The liquid capacity shall be at least twice the capacity required for a septic tank to serve the same premises. (See Regulation 5.1 of this article.)

11.3 Construction—The construction of cesspools shall comply with Regulations 9.2, 9.3, and 9.4 of this article.

11.4 Location—Cesspools shall be located in accordance with the requirements of Regulation 3 of this article.

11.5 Leaching Area—The leaching area required shall be determined in accordance with the provisions of Regulation 14 of this article. In determining the leaching area, only the side wall area below the elevation of the inlet shall be used. In no case shall the capacity be less than required in Regulation 11.2 of this article.

11.6 Access—Cesspools shall be located in readily accessible locations.

11.7 Covers—Cesspools shall be provided with an access manhole or removable cover.

11.8 Ground Water—The requirement relative to ground water shall be the same as in Regulation 9.6.

Regulation 12. Miscellaneous Disposal

12.1 General—The use of any type of disposal facility other than those described above is prohibited unless specifically approved by the approving authority.

12.2 Drains—No rain water leader, cooling water drain, cellar drain, or other drain other than one for sanitary sewage shall discharge into or be connected with any sewage disposal system.

Regulation 13. Transportation and Disposal of Privy, Cesspool, and Septic Tank Contents

13.1 Permits—No person shall engage in the removal or transportation of the contents of privies, cesspools, septic tanks, or other offensive substances without first obtaining a permit from the board of health under Section 31A of Chapter 111 of the General Laws. Such permits

shall expire at the end of the calendar year in which they are issued unless they are earlier revoked for cause.

13.2 Equipment—No person shall use equipment to remove or transport the contents of privies, cesspools, or septic tanks or other offensive substances unless such equipment has first been inspected and approved by the board of health.

a. Mobile Tanks. Mobile tanks shall be securely mounted on trucks. They shall be watertight, and provided with a leak-proof cover and tight discharge valves.

b. Venting of Mobile Tanks. Mobile tanks shall be provided with a vent constructed in a manner that will permit the escape of gas but not the liquid contents of the tank.

c. Hose. Suction or pressure hose shall be in good repair.

d. Pumps. Pumps shall be maintained in a condition that will prevent the leakage of sewage.

13.3 Disposal—Disposal of the substances listed in Regulation 13.1 of this article shall be by burial or by discharge into a sanitary sewer. If disposal is by discharge into a sanitary sewer, it shall be in a manner and at such times as may be acceptable to the authority having jurisdiction over the sewer. If disposal is by burial, it shall be in a location approved in writing by the board of health.

13.4 Transportation—The contents of privies, cesspools, and septic tanks shall be transported in a manner that will not create a nuisance or a health hazard.

Regulation 14. Percolation Test

14.1 General—The suitability of the soil for sewage disposal purposes shall be determined from the results of tests conducted as described below, and from the type of underlying soil, maximum ground water elevation, presence of ledge, drainage conditions, and other related data.

a. At least one percolation test shall be performed at the site of each disposal area. More than one test will be required where the soil structure varies or where large disposal areas are required.

b. Percolation tests as prescribed in this section shall be performed at the expense of the owner or developer by a registered professional engineer, registered sanitarian, or other person who in the opinion of the approving authority is qualified to perform such tests. The approving authority may require that all percolation tests be performed in the presence of its representative. The owner or developer shall provide at his own expense the labor necessary to dig test holes and shall provide the water for percolation tests.

c. Percolation tests shall not be made in test holes that have remained open to the atmosphere for more than 3 days, nor shall they be made in frozen ground.

d. Percolation tests shall not be made in filled ground unless the soil

has been mechanically or hydraulically compacted or allowed to settle for a period of 6 months.

c. The minimum leaching area to be installed shall be determined from the following table, with the estimated daily sewage flow as determined in accordance with Regulation 2.10 of this article.

LEACHING AREA REQUIREMENTS

*Percolation Rate**	*Leaching Area Required*	
Minutes per Inch Drop	Square Feet per Gallon	Gallons per Square Foot
2.0 or less	0.5	2.00
2.5	0.56	1.79
3.0	0.62	1.61
3.5	0.66	1.52
4.0	0.70	1.43
5.0	0.75	1.33
6.0	0.81	1.24
7.0	0.86	1.16
8.0	0.91	1.10
9.0	0.96	1.04
10.0	1.00	1.00
15.0	1.15	0.87
20.0	1.28	0.78
30.0	1.50	0.67
Over 30	Unsuitable	Unsuitable

* The percolation test must be performed in accordance with the procedure outlined in Regulation 14.2 of this article.

(1) Minimum area for leaching trench is 0.5 square foot per gallon.

(2) Minimum area for leaching bed is one square foot per gallon.

(3) Whenever the percolation rate is over 10, the use of leaching trenches is desirable.

(4) The above leaching area requirements are for settled sanitary sewage of normal strength. The area required for subsurface disposal of other wastes is to be determined on the merits of each individual case.

(5) Soil with a percolation rate of over 30 is considered unsuitable for the subsurface disposal of sewage.

14.2 Percolation Test Procedures

a. Prepare a test hole in the disposal area at least 12 inches in diameter with vertical sides at least 18 inches deep terminating in the soil at the elevation of the bottom of the proposed or intended leaching trench, bed, or seepage pit.

b. Establish a fixed point at the top of the test hole from which all measurements can be taken.

c. Scratch the bottom and sides of the test hole to remove any smeared soil surfaces. Either add 2 inches of coarse sand to protect the bottom from scouring or insert a board in the hole so that water may be poured down or on it during the filling operation.

d. Carefully fill the hole with clear water to a minimum depth of 12 inches and maintain the water level there by adding water as necessary for 15 minutes.

e. If the water level drops to a depth of 9 inches in less than 30 minutes, measure the length of time in minutes for it to drop from a depth of 9 inches to a depth of 6 inches. The time required to do so divided by 3 will equal the percolation rate in minutes and fractions thereof, per inch of drop, and is to be considered the percolation rate.

f. If the initial 3-inch drop requires more than 30 minutes (rate equal to more than 10 minutes per inch) the soil should be saturated by filling the hole to the top and maintaining it full for at least 4 hours. The soil should then be permitted to swell overnight so that the soil condition will approach that which exists during the wettest season of the year. After the overnight swelling period, the test should be made again by filling the hole to 12-inch depth and measuring the 9- to 6-inch depth drop as in (d) and (e) above.

14.3 Subsoil and Ground Water Determination—The board of health may require that observation pits be dug to a depth of 4 feet below the bottom of the proposed disposal field. The board may also require test holes to be dug to determine the maximum ground water elevation or the elevation of ledge.

PART II. ENFORCEMENT

Regulation 20. Variance

20.1 The board of health may vary the application of any provision of this article with respect to any particular case when, in its opinion, the enforcement thereof would do manifest injustice; *provided,* that the decision of the board of health shall not conflict with the spirit of these minimum standards. Any variance granted by the board of health shall be in writing. A copy of any such variance shall, while it is in effect, be available to the public at all reasonable hours in the office of the clerk of the city or town, or in the office of the board of health, and notice of the grant of variance shall be filed with the Commissioner of Public Health of the Commonwealth.

Regulation 21. Variance, Grant of Special Permission; Expiration; Modification, Suspension of

21.1 Any variance or other modification authorized to be made by this article may be subject to such qualification, revocation, suspension, or expiration as the board of health expresses in its grant. A variance or other modification authorized to be made by this article may otherwise be revoked, modified, or suspended, in whole or in part, only after the holder thereof has been notified in writing and has been given an opportunity to be heard, in conformity with the requirements for an order and hearing of Regulations 23 and 24 of this article.

Regulation 22. General Enforcement

22.1 The provisions of Article I of this Sanitary Code shall govern the enforcement of this article except as supplemented by the following regulations.

Regulation 23. Orders; Service and Content

23.1 If an examination as provided for in regulation 3 of Article I reveals failure to comply with the provisions of this article, the board of health may order the persons responsible to comply with the violated provision.

23.2 Every order authorized by this article shall be in writing. Orders issued under the provisions of Regulation 23.1 shall be served on all persons responsible for the violated regulations. All orders shall be served on the designated person:

a) personally, by any person authorized to serve civil process, or

b) by leaving a copy of the order at his last and usual place of abode, or

c) by sending him a copy of the order by registered or certified mail, return receipt requested, if he is within the Commonwealth, or

d) if his last and usual place of abode is unknown or outside the Commonwealth, by posting a copy of the order in a conspicuous place on or about the affected premises.

23.3 Subject to the emergency provision of Regulation 5 of Article I any order issued under the provisions of this article shall:

a) include a statement of the violation or defect, and may suggest action which if taken will effect compliance with this code, and

b) allot a reasonable time for any action it requires, and

c) inform the person to whom it is directed of his right to a hearing, and of his responsibility to request the hearing, and to whom the request shall be made.

Regulation 24. Hearing

24.1 The person or persons to whom any order served pursuant to Regulation 23 of this article has been directed may request a hearing before the board of health by filing within 7 days after the day the order was served in the office of the board of health a written petition requesting a hearing on the matter. Upon receipt of such petition the board of health shall set a time and a place for such hearing and shall inform the petitioner thereof in writing. The hearing shall be commenced not later than 10 days after the day on which the petition was filed; *provided,* that upon application of the petitioner the board of health may postpone the date of the hearing for a reasonable time beyond such 10-day period if in the judgment of the board of health the petitioner has submitted a good and sufficient reason for such postponement.

24.2 At the hearing the petitioner shall be given an opportunity to be heard and to show why the order should be modified or withdrawn.

24.3 After the hearing the board of health shall sustain, modify, or withdraw the order and shall inform the petitioner in writing of its decision. If the board of health sustains or modifies the order, it shall be carried out within the period allotted in the original order or in the modification.

24.4 Every notice, order, or other record prepared by the board of health in connection with the hearing shall be entered as a matter of public record in the office of the board of health.

24.5 If a written petition for a hearing is not filed in the office of the board of health within 7 days after an order as provided in Regulation 23 has been issued, or if after a hearing the order has been sustained in any part, each day's failure to comply with the order as issued or modified shall constitute an additional offense. (See Regulation 26.)

Regulation 25. Appeal

25.1 Any person aggrieved by the decision of the board of health may seek relief therefrom in any court of competent jurisdiction, as provided by the laws of this Commonwealth.

Regulation 26. Penalties

26.1 Any person who shall violate any provision of this article for which penalty is not otherwise provided in any of the General Laws or in any other provision of this article or Article I of this Sanitary Code shall upon conviction be fined not less than 10 nor more than 50 dollars.

26.2 Any person who shall fail to comply with any order issued pursuant to the provisions of this article shall upon conviction be fined not less than 10 nor more than 50 dollars. Each day's failure to comply with an order shall constitute a separate violation.

. . . . . SUGGESTED FORM . . . . .

BOARD OF HEALTH

_____ MASSACHUSETTS

CERTIFICATE OF COMPLIANCE

THIS IS TO CERTIFY, That the Individual Sewage Disposal System installed ( ) or repaired ( ) by_____ at_____
installer

_____ has been constructed in accordance with the provisions of Article XI of The State Sanitary Code as described in the application for Disposal Works Construction Permit No._____ dated_____

The issuance of this certificate shall not be construed as a guarantee that the system will function satisfactory.

DATE_____ Inspector_____

BOARD OF HEALTH

_____ MASSACHUSETTS

DISPOSAL WORKS CONSTRUCTION PERMIT

No._____

Permission is hereby granted _____ to construct ( ) or repair ( ) an Individual Sewage Disposal System at No._____
street

as shown on the application for Disposal Works Construction Permit No._____

Dated_____

_____
Board of Health

DATE_____

No. _____ . . . . . SUGGESTED FORM . . . . . Fee _____

BOARD OF HEALTH

_____ MASSACHUSETTS

APPLICATION FOR DISPOSAL WORKS CONSTRUCTION PERMIT

Application is hereby made for a permit to Construct ( ) or Repair ( ) an Individual Sewage Disposal System at:

Location—Address_____ or Lot No._____

Owner _____ Address _____

Contractor _____ Address _____

Type of Building Size Lot _____ Sq. feet

Dwelling—No. of Bedrooms_____ Expansion Attic ( ) Garbage Grinder ( )

Other—Type of Building_____ No. of persons_____ Showers ( )

Cafeteria ( ) Other fixtures_____

Design Flow ___ gallons per person per day. Total daily flow _____ gallons

Septic Tank—Liquid capacity _____ gallons Length_____ Width_____

Diameter _____ feet Depth _____ feet

Disposal Trench—No.___ Width___ Total Length___ Total leaching area ___ sq. ft.

Disposal Bed No.___ Diameter___ Depth below inlet___ Total leaching area ___ sq. ft.

Other Distribution box ( ) Dosing tank ( )

Percolation Test Results Performed by_____ Date_____

Test Pit No. 1 _____ minutes per inch Depth of Test Pit_____

Test Pit No. 2 _____ minutes per inch Depth of Test Pit_____

Depth to Ground Water_____

Description of Soil_____

Nature of Repairs or Alterations—Answer when applicable _____

_____

_____

Check or fill in where applicable

Agreement:

The undersigned agrees to construct the aforedescribed individual sewage disposal system in accordance with the provisions of Article XI of the Sanitary Code. The undersigned further agrees not to place the system in operation until a Certificate of Compliance has been issued by this board of health.

_____ _____
Owner date

Application Approved by_____ _____
date

Application Disapproved *for the following reasons:* _____

_____

_____
date

Permit No._____ Issued_____
date